Interpersonal Involvement in Success of Task Completion within Geriatric Settings

A Senior Honors Thesis in the Department of Psychology, Sweet Briar College

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Table of Contents

Preface

The study that follows is more than a simple investigation of a possible relationship between several variables. After almost two and a half years of refining the initial idea and methodology, I realized that the value of this current study lies as much, or more, in the evolution of an idea and the sharpening of its focus than its concluding findings.

What started out as a straightforward project turned into an intense immersion into the process of doing research. Having recently been introduced to the field of experimental psychology, I wanted to incorporate my interest in occupational therapy into research I was conducting for my Psychology major. Specifically, I wanted to explore the relationship that exists between therapists and their clients. A majority of previous research (Rosa & Hasselkus, 1996; Cook & Moll, 1997; Lyons, 1997) had used largely qualitative observations to support their hypotheses on effective therapeutic relationships. Quantified research was missing. I was captivated by the idea of translating these abstract and complex human interactions into objective, unbiased numbers. But while numbers can be manipulated, human beings cannot. Conducting my research with elderly participants, I realized that this is both the beauty and drawback of working with a special population. So when plans were not working out, the methodology, and not the participants, had to bend. I learned how to stay flexible, to constantly re-evaluate my approach, to hang on to optimism. Most importantly to me, I learned to value the individuality of the participants, and the fact that they were *not* responding the way I had pre-conceived. The process of the research, and not the final statistical analyses, became my end-goal.

Working with geriatric patients, I had to quickly revise or abandon much of my original methodology. Finding older participants initially posed a problem. Facilities seemed reluctant to

allow me access to their patients, and only upon detailed explanation, and a tuberculosis test, could I start my research. I also learned that I had greatly underestimated participants' level of physical impairment. Many participants were very old (several were over 85, one participant was 100 years old) and had moderate to severe deficiencies in eyesight and dexterity. The tasks that I posed had to be greatly simplified so that participants could complete them. Questionnaires had to be administered orally because almost all participants could no longer read nor write. With each delay and obstacle, obtaining clear-cut data became less important. Instead, I began to focus on the experiential value of the research.

In the following chapters I have tried to capture my progression of thought, to give the reader a taste of the evolution of this project. Wherever possible, to preserve the scientific writing approach and APA style, I have eliminated the use of the first person, substituting instead "the experimenter" or "the primary investigator." I have included some anecdotal observations and notes in appendices which do retain the "I." The information of the appendices, while not included in the body of the research paper, will be vital to the reader in fully understanding the transformation that the research project has undergone. I encourage readers to refer to the appendices whenever possible. The full research proposal as originally submitted is presented in Chapter 2 and includes research expectations. Chapters 3 and 4 explain in detail the actual research process.

CHAPTER 1

The Evolution of a project - History behind the Current Research

Generating an Idea

The idea of the current study began as a project for the 210 Experimental Psychology class at Sweet Briar College. A previous internship in physical therapy stimulated curiosity about what made a therapeutic relationship effective. The internship included work as both receptionist and therapist aide, which provided a lot of contact with clients during preparation of therapy rooms and work with the therapists. Observations during the internship led to the initial hypothesis that the type of relationship a patient has with the therapist could be key in influencing the success of the therapy. Specifically, it was thought that how much and how closely a therapist interacts with her patient would determine how well a patient recovered. Patients who had close relationships and more interactions with their therapists seemed to be more dedicated in coming to their appointments and improved faster. Patients who seemingly did not connect as well with their therapists appeared to have a slower recovery rate. They seemed to have less progress in their therapy, coming for longer periods of time. These patients also tended to have more cancellations than did other patients.

In deciding on a project for the Experimental class, the assigned research group decided to further investigate the observations and ideas made by the primary investigator. The goal was then to 'translate' a therapeutic relationship into an 'experimenter-participant relationship' which could be tested in a laboratory setting.

Study 1, Tossing Pennies: A first attempt at task involvement

Since interaction over a physical activity is essential to physical and occupational therapy, the researcher sought to devise an activity which would allow interaction with participants, could be completed relatively easily, but also allowed room for improvement. In therapy, games are often used to generate a client's interest in her rehabilitation and to provide a medium for therapist-client interactions. These interactions are important not only for physical but also emotional rehabilitation as the challenge of the activity encourages clients to express frustrations and feelings about their condition.

Together with her research group, the primary investigator chose a penny tossing task to simulate these therapeutic conditions. Since penny tossing involved finger dexterity, it was thought reasonable to expect some improvement in technique and coordination over the sessions. Participants were recruited from the college which the experimenters attended.

If an increased interaction with participants could generate a closer rapport between the experimenter and participant, a closer rapport might also lead to a greater improvement in the performance of the penny tossing. Therefore, three levels of interaction, still being used in the current study, served as the independent variable. Participants either had very limited contact with the experimenter, only experienced the physical presence of the experimenter during sessions, or were also engaged in emotional interaction with the experimenter through more in-depth conversation.

In the Limited Interaction group, it was hypothesized that limiting contact between participant and experimenter would limit the type of rapport that would develop. Participants received basic instructions about the task, but were left alone for the actual session.

For the Physical Interaction group, contact with the participant was strictly physical. That is, the experimenter remained in the room during the task sessions, but did not engage the participant in additional conversation, nor did the researcher try to connect with her emotionally.

This type of interaction served as a control to see whether it was simply the presence of the researcher that incited better task performance.

In the last group, the Emotional Interaction group, the researchers made a concerted effort to connect on an emotional level with participants. An emotional interaction was established if the researcher could express interest or empathy to participants about issues/events going on in their life. This level of interaction would allow for examination of the effect that a close rapport would have on task performance.

Participants attended three sessions of penny tossing. For each session, participants were asked to toss 50 pennies into a bowl at a distance of six feet. In order to test improvement on task performance, the researchers timed the participant's performance and counted the number of coins she successfully tossed into the bowl. After completion of the three sessions, participants were given a questionnaire to self-evaluate their performance and rate of improvement, as well as to evaluate the role of the experimenter in this improvement. Questions inquired about participant's perception of the ease of the task, her overall attitude towards the task, her amount of improvement, and the helpfulness of the experimenter.

While trends for the main effect were supportive of the hypothesis, no main effects were found to be significant. This suggested that with some methodological changes and more stringent research, mean trends might have reached significance. Researchers felt several factors could have influenced the findings, the most important of which were ineffective questionnaires and a task (penny tossing) which did not allow sufficient interaction with participants.

The questionnaires were mainly ineffective because answers were based on a scale of three points rather than a five or seven-point Likert-type scale which could have measured more subtle changes in attitude among the groups. For instance, participants were asked to evaluate

their attitude towards the task as negative, neutral, or positive. No in-between qualifiers were provided.

Because the penny-tossing task was so quickly completed (less than 60 seconds), little time was provided for feedback and communication. A close rapport may not have been established because of this insufficient interaction, which could have influenced the findings.

Study 2, The Inception of Parquetry block laying

A year later, the primary investigator of the "penny tossing" experiment decided to expand upon the original research idea using a more appropriate task, a parquetry assembly board used in occupational therapy. Another internship, this time in occupational therapy, familiarized the experimenter with the parquetry assembly board, a three-dimensional geometric wooden block puzzle. For this task, blocks are assembled into a specific pattern using two-dimensional color design cards. Various levels of difficulty for the cards are available. Because the completion of a puzzle would take more time than flipping pennies, and was not as mindless an activity, it allowed for more interaction between participants and experimenter. It was hoped that increasing interaction with participants would help develop a more in-depth rapport between researcher and participant.

Using the assembly board, the researcher could give participants more in-depth performance feedback as well as hold casual conversations during set-up and takedown of the puzzle. Feedback could include discussion of block laying techniques which had worked especially well for the participant, such as laying all the blocks of one color first before moving on to the next color of blocks. Well-placed comments could communicate greater care and interest for a participant if the experimenter used active-listening skills and attentive body language. This would in turn facilitate further conversation because participants would feel more at ease with the experimenter.

Another significant change from the first study was the use of a seven-point Likert Scale in questionnaires instead of the three-point scale in order to detect more subtle differences in opinions on the evaluations (see Appendix A). Participants were again recruited from the college population.

For the design of the study, the same three levels of interaction existed: Limited, Physical and Emotional Interaction. Participants attended one practice session and three additional sessions. For the practice session, participants were given two easy design patterns in order to practice block assembly. For subsequent sessions, performances were timed, and participants were asked to complete four design patterns: two easy design patterns and two more difficult designs (see Appendix A).

At the end of the first session and each subsequent session, participants filled out a short self-evaluation to determine their interest in the task and their impressions of the task difficulty, as well as to assess their self-perceived performance (see Appendix A). Upon completion of the last session, participants answered additional questions concerning the effect of the experimenter and the effect of other variables on their task performance (see Appendix A).

The results of this study, just as in the past research, suggested trends which supported the original hypothesis, but again none of the main effects were found to be significant. The Emotional Interaction Group did evaluate the experimenter as having a significantly more positive and a more helpful influence on its performance $F(2,22) = 9.010$, $p < .01$ (Mean scores, where higher scores indicate more positive responses: Limited Interaction = 4.625, SD = 1.188; Physical Interaction = 5.000, SD = 1.323; Emotional Interaction = 6.750, SD = .463). While not significant, mean trends also suggested that the Emotional Group performed the puzzle task faster than the other two groups (Mean scores, session 1: Limited Interaction = 94.000 s, SD = 79.7; Physical Interaction = 96.250 s, SD = 43.001; Emotional Interaction = 79. 844s, SD =

35.225; session 3: Limited Interaction = 79.25 2, SD = 33.919; Physical Interaction = 74.528 s, SD = 20.730; Emotional Interaction = 71.81 s, SD = 20.027).

One of the biggest areas of possible confounding was the fact that many of the participants knew the researcher because they all attended the same small college (less than 650 students). This posed several difficulties. Primarily, it was difficult to stay within the confines of the three levels of interaction. In the Limited and Physical Interaction Groups, the experimenter would not have displayed her characteristic personality. Participants who knew the experimenter, if they noticed a distance in her attitude toward them, would then attempt to solicit more emotional interaction, expecting her to act in a certain way (e.g. talkative, friendly). Participants would actively try to engage her in more conversation, to get more feedback than the interaction allowed. It was therefore hard to treat them with more distance, as stipulated by the Limited Interaction Group.

Another area of confounding could have been the fact that the students all had normal ranges of dexterity and vision. Therefore, participants would only be able to improve a limited amount on their performance of the puzzle. Indeed, the college population, when completing the tests, all scored in the normal range of block assembly speed (see Neistadt, 1994). Participants therefore wouldn't really be expected to improve in their assembly speed. However, loss of dexterity or vision is a common and important issue faced in occupational therapy. These same defects also effect the use of the parquetry block assembly board in therapy. This loss of functioning adds an additional emotional and psychological level to therapy which the research could not replicate.

Changing Populations

For the current study, the researcher decided to expand testing to a different population, namely a geriatric population. Two crucial facts about an aging population are advantageous to

the research: first, decline in dexterity and vision does typically accompany aging. The geriatric population, with the expected increase in reaction time caused by decreased vision and coordination, therefore posed a better testing population. Unlike students, elderly participants should be more likely to show improvement in the actual task performance. Second, working with a geriatric nursing home or retirement center would ensure that the researcher would not know any of the participants prior to the research, a factor that had somewhat confounded earlier experimentation. This could make it easier to maintain the three levels of interaction, without interacting more with people in the Limited or Physical Interaction Group than initially intended. It was also thought that establishing a rapport with the elderly participants could be easier and more meaningful, since residents in nursing homes often have only limited significant interaction with people.

Research in Working with Geriatric Populations

A literature review on geriatric populations provided insight into the methodological challenges faced in research with elderly participants.

In her investigation of barriers when working with older adults who have psychiatric disabilities, Hatfield (1999) outlines several physical conditions which can make effective treatment difficult. Some of these obstacles are chronic physical disorders including vision and hearing loss, arthritis, and osteoporosis. These same conditions could make it difficult for participants to complete block designs. A participant's hearing loss could also put her level of rapport with the experimenter at risk because hearing loss could complicate effective communication. Hatfield also notes that older adults, having lived through economic depressions and world wars, tend to be independent and self-sufficient. Talking about emotional and psychological problems is often difficult for them because they see this as a sign of weakness (Hatfield, 1999). This finding may be especially relevant to the current study since a depression

questionnaire will be administered (see Appendix B). Participants may be reluctant to answer questions which might make them seem weak and impaired.

Creighton (1995) investigated the relationship between afternoon rest and the performance of geriatric patients during rehabilitation sessions. Over several weeks of rehabilitation for fractures, participants' (n=6) levels of coordination, strength, concentration, alertness and reaction time were charted. Results indicated that participants tended to become drowsy in the late afternoon. When naps were encouraged during this time, some improvement in cognitive performance was noted. This finding may be helpful in the current study as late afternoon testing may need to be avoided in order to ensure that participant's performance on the block assembly, as well as their responses to questionnaires, are not jeopardized by sleepiness.

Glaser (1998) mentions additional difficulties in providing care for older patients in nursing homes. According to Glaser (1998), their frailty, chronic illnesses, and especially their dementia complicate medical care for elderly. Evaluating, communicating with, and achieving compliance of nursing home patients is often difficult because approximately two thirds of residents in nursing homes suffer from dementia (Glaser, 1998). It is possible that participants in the current study may be physically fit enough to fulfill experimental requirements, but may have dementia to such a level that following instructions and understanding questionnaires may be difficult.

CHAPTER 2

The Research Proposal

The research proposal has been included as it was originally proposed, that is, before any changes were made to the methodology. Due to problems which arose once testing had begun, many of the elements in the proposal were later revised. It is the hope of the author that, by illustrating the original intentions of the research, this will allow the reader a better grasp of the evolution which the project has undergone.

Interpersonal Involvement in Success of Task Completion within Geriatric Settings

Introduction to the Problem

What influences successful rehabilitation within occupational therapy? Therapists will often use games, crafts, and logic problems in rehabilitation to improve a patient's sensorimotor skills. Because activities are key to treatment in occupational therapy, it would be plausible to look to task performance studies for insight into this question. There is a large body of research exploring variables which either improve or worsen the completion of various tasks (Meyer, 1992; Butler, 1987; Tang, 1987). Results of this research suggest that successful task completion might be contingent upon personality type of the participant, the motivation of the participant, or the expectations of an audience (Tang, 1987; Butler, 1987; Crisson, Seta & Seta, 1995). Even the presence of one or more people during the task can significantly influence performance rates, as Crisson, Seta and Seta (1995) observed. These findings demonstrate a wide range of factors which could affect performance levels.

In assessing therapeutic task performance, however, occupational therapy places an additional emphasis on the interpersonal relationship between therapist and patient (Tryssenaar

1997; Clark, Krupa & Scott, 1993; Lloyd & Maas, 1993). Occupational therapy not only values the completion of tasks, but also the connection with which the therapist and client achieve this accomplishment. Cook and Moll (1996) explored effective types of therapy techniques. Part of their method included the observation of individual and group sessions of occupational therapy. Cook and Moll (1996) found that therapists felt activities were a means to, but were not the main focus of, a specific treatment goal. Rather, activities emphasized discussion with the patient about the treatment plans, and the patient's emotional reactions to the procedure. In addition, therapists evaluated "tasks" as a means of establishing an understanding and increasing communication with the patient. Activities also helped patients to share their feelings and to express their thoughts (Cook & Moll, 1996; Peloquin, 1990).

Crepeau (1991) used excerpts from a specific case study to more fully illustrate this idea of activities facilitating conversation. While activities did serve a specific treatment goal, such as strengthening the use of the patient's right hand, they also helped open conversation about sensitive topics. Crepeau asserts that conversation about topics concerning the patient's severe disability would have been difficult under a more formal situation; activity and games relaxed the atmosphere, easing communication. The therapist in this case was thus able to address the patient's feelings about being a quadriplegic, and to explore the patient's fears and anxieties.

This example serves to strengthen Crepeau's (1991) argument for a more understanding and empathic relationship between client and therapist. Indeed, one of Crepeau's criticisms is against therapists and doctors using the power of their status to influence patient's behavior. Crepeau observed that medical professionals often intimidate patients into following therapeutic and medical treatment plans. Patients perceive them as controlling their health and fear negative consequences if they do not follow the therapist's/doctor's explicit orders. Crepeau argues that instead of instilling fear into patients, therapists must waive their authority as experts and use

interactions with the patient to learn from the patients themselves (Crepeau, 1991). This approach to therapy could be especially important when working with an elderly population, who, due to increasing incidents of bereavement and depression, may be more sensitive to the therapist's professional distance.

However, ambiguity still exists concerning the depth of the patient-therapist involvement. Peloquin (1990), in a review of the therapeutic trends in occupational therapy, contends that an inconsistency exists in the vision and purpose of the therapeutic relationship. This divergence is largely due to an evolving view of occupational therapy: past emphasis was on professionalism and maintaining an "impersonally personal" interaction. Present guidelines, on the other hand, encourage genuine concern and a balance between competence and caring. Therapists should now collaborate with patients in therapy, attaining a joint goal, and not the therapists' goals. Therapy can extend beyond a rigid technique; each activity can be adapted to meet personal needs of clients and to encourage communication (Peloquin, 1990; Crepeau, 1991). New therapists, however, are largely left to themselves to decide which viewpoint to embrace.

The emergent personal therapeutic approach, which Peloquin (1990) noted, was catalyzed at least in part by rising theories on interpersonal relationships. One of the most influential propositions was Carl Rogers' (1957) analysis of the conditions needed for personality change. Rogers defines six conditions which must be met for lasting change to take place, central to which is the concept of the therapist's unconditional positive regard and empathic understanding for the patient. Furthermore, this attitude cannot be feigned but has to be genuine. The therapist must feel the client's emotions as if they were his/her own. According to Rogers, a relationship is key in fostering these attributes. Interestingly, it is not just a psychotherapeutic relationship that can meet these conditions. Rogers extends the effectiveness of these principles to any situation that brings about personality change, including educational, correctional, military and industrial

programs. In fact, Rogers argues that only experiential training, and not professional training, can teach students how to become effective therapists. Psychiatric, medical and psychological training only help in as far as they give the therapist a context in which to practice unconditional, positive regard (Rogers, 1957). Current literature supports the importance of hands-on experience and increased focus on interpersonal skills (Crepeau, 1991; Lloyd & Maas, 1993; Gleber, 1995).

Occupational therapists, then, seem to be facing the choice between a personal and an impersonal approach to therapy. Lyons (1997) poignantly illustrates this continuing dilemma within occupational therapy. She found that therapists had trouble defining the amount of emotional and social distance they should keep in relation to their patients. Lyons interviewed sixteen female students in an undergraduate occupational therapy program, asking them about their understanding of professional behavior. In addition to the interview, Lyons observed participants in their fieldwork in order to strengthen the information of the verbal interview. Lyons found that students believed rapport should be established with patients through personal interest and involvement. However, they felt a greater need to distance themselves from their patients and exert control over them for fear of being manipulated or used by patients. It seems that students perceived possible risks to themselves because of their caring for the patients; distance was a form of self-preservation.

Interestingly, students were also being evaluated in the classroom on how well they set limits in their patient relationships (Lyons, 1997). They were additionally encouraged to exercise their professional expertise to control patients. Lyons observed that young students lacked a sense of authority which older, more experienced therapists had acquired. By exerting limits, students attempted to establish this professional rapport (Lyons, 1997). Working with older

patients could aggravate students' insecurities since they are technically working with people who are their social elders.

Peloquin (1990), in her review of the therapy vision, noted that early instructional texts of occupational therapy also promoted limit setting: placing limits on the therapeutic relationship was encouraged in order to maintain an impersonal distance. It seems, then, that students within occupational therapy are receiving mixed instructions from training curriculum on how to behave towards patients. Students may deeply value personal contact and meaningful patient interaction, but their focus on care is then redirected towards a more "professional" attitude during training. Preserving the self and avoiding burnout seem to take precedence over patient care (Lyons, 1997).

Peloquin (1995), in her later reflections on empathy, notes that if therapists seem to fear intimacy with patients, it is because they are *sympathizing*, and not empathizing, with patients. According to Peloquin, sympathy poses the risk of being enclosed by the patient's world of emotion. Empathy, on the other hand, involves thinking as well as feeling and allows evaluation of situations. A therapist who empathizes remains objective while understanding a patient's pain. She can understand a patient's feelings of hopelessness but can still see the potential of recovery. Ultimately, empathy is expressed through action: being there for the patient, entering into the patient's experience, connecting, having the power to recover from (and not being enveloped in) that connection, and deriving a personal enrichment from empathizing (Peloquin 1995). Having noted the confusion about the meaning of empathy, Peloquin defines empathy in practical terms, delineating its use within patient relationships.

Clarifying the complexity of patient-interactions continues to be important in order to improve the quality of therapy. A dichotomy in therapists' thinking, if it exists, could also become the source of ambiguity within the actual treatment. If therapists do not have a consistent

approach to therapy, this could raise the frustration level of patients, especially in geriatric patients who often suffer from dementia. Increasing frustration with the process of therapy could very well decrease its effectiveness. In view of this danger, while acknowledging the risks of closeness with patients, established occupational therapists continue to advocate a more human therapy model. They maintain that too much professional distance and control can, in fact, be detrimental to the progress of the patient (Tryssenaar, 1997; Lyons, 1990).

Vital, then, to this more humane therapy model is a sense between therapist and patient of working together towards a common goal (Rosa & Hasselkus, 1996; Neistadt, 1995; Cook & Moll, 1997; Lloyd & Maas, 1993). Rosa and Hasselkus (1996) attempted to further define the nature of the occupational therapeutic relationship. In their research, they analyzed data from a nationwide sample of telephone interviews conducted among occupational therapists. The idea of "connecting" appeared often in the therapists' dialogue. This emotional "connection" was defined in terms of being there for the patients, sharing in their suffering, providing support, and communicating understanding simply through the therapist's presence. Simple acts such as eating lunch with a patient became means of forging this connection (Rosa & Hasselkus, 1996). If this "connecting" never occurred, both therapists and their patients viewed their relationship as insignificant and, in turn, felt the therapy was less successful. At times, a patient would refuse to see improvement that the therapist felt showed a strong step towards rehabilitation (Rosa & Hasselkus, 1996). In this case, the therapist expressed distress over not having connected. Therapists and patients might therefore attempt to make an emotional connection, even when working towards a physical rehabilitation goal. The determinants of therapeutic success, then, seem to transcend, but do not exclude, mere performance evaluation and feedback (Rosa & Hasselkus, 1996; Peloquin 1990).

This research seems to imply the importance of personal contact and emotional involvement within therapy. The rapport which the therapist and patient establish appears to influence the feelings of the therapist and client towards the therapy (Rosa & Hasselkus, 1996), which could influence the successfulness of the therapy (Tryssenaar, 1997; Lyons 1990; Cook & Moll, 1997).

One factor that could be affecting elderly client's feelings towards therapy and their therapists is that the elderly are less motivated by rewards (Tripp and Alsop, 1999). Since incentives are believed to affect a patient's motivation, this desensitization to rewards could reduce their performance in therapy. Trip and Alsop (1999) propose that therapists need to increase the amount of reward they give to geriatric clients in order to increase motivation and performance. If therapists do not compensate for this reduced motivation, progress will slow down, and both the patient and the therapist could experience frustration. This added strain to the patient-therapist relationship would demand effective communication skills and trusting patient-therapist rapport in order to deal with tensions that arise.

Ronnberg (1998) researched activities that could enhance interaction with geriatric patients and facilitate a close emotional rapport. Specifically, Ronnberg looked at ways to break down the social isolation which seems key in causing depression among the elderly. Participants were given the Nottingham Health Profile (NHP) which investigates perceived distress about sleep, pain, energy, mobility, emotional reactions and social isolation. They were then divided into three groups: a story-telling group, a television-watching group, and a control group. The story-telling group was told traditional tales in which the central character was usually an older person. The television-watching group watched quiz shows and contemporary programs. The control group continued their normal schedules. Both the story and the TV group were then engaged in a discussion, asking them about their memories and associations.

After two six-week sessions, the story-telling group significantly decreased their scores on the NHP, denoting an improved quality of life. Videotapes of the sessions revealed that participants in this group talked more than they had before and reminisced about their past and childhood. They were much more emotionally engaged. Ronnberg (1998) postulates that this effect could also improve the relationship between the geriatric patient and staff because knowing the patient's life might facilitate respect and care for the patient.

Another added problem in treating the elderly is the high prevalence of depression within geriatric institutions. However, depression among the elderly is difficult to diagnose. Chronic diseases which are prevalent among the elderly (Parkinson disease, dementia) can mask depressive symptoms, and the possibility of bereavement among older people can obscure causes of melancholy (Friedrich, 1999). Decreases in sensorimotor, vestibular, and visual system functioning are also well documented among the elderly (Lord, Lloyd, & Li, 1999; Bron, 1997) as well as increases in reaction time (Tripp & Alsop, 1999). All these conditions compound difficulties in therapy because they add to frustration levels and disappointments when patients cannot reach the rehabilitative goals that they would like. It is crucial in these situations for the therapist to be able to empathize and effectively communicate her understanding to the patient. The therapist must be able to offer hope in the face of these added challenges.

Lloyd and Mass (1993), in their research on interpersonal skills, suggest using Carkhuff and Berenson's (1977) humanistic model of helping to improve therapists' techniques of relating to patients. Carkhuff's model emphasizes empathy, respect, genuineness, and concretion within a therapeutic relationship (Lloyd & Maas, 1993). Lloyd and Mass's suggestion stems from their literature review which found that occupational therapy training often does not provide instruction and practical experience in developing interpersonal skills. Client contact by itself does not seem to be enough to guarantee improved interpersonal skills (Lloyd & Maas, 1993).

Carkhuff's model gives concrete steps for applying a more empathic approach to patient interactions. In Gleber's (1995) research, dental Hygiene students, trained with Carkhuff's model, significantly improved their ability to write and discern helpful responses to clients. In addition, students' interpersonal behavior patterns significantly increased when tested a year after training (Gleber, 1995).

While it is evident that many theories and first-hand accounts emphasize more interpersonal involvement for successful therapy, quantitative support is still missing. Rosa and Hasselkus' (1996) research, along with others (Cook & Moll, 1997; Lyons, 1997), is largely based on the qualitative observations of the therapists. And while qualitative observations are important and should not be discounted, quantitative data could add significant support to the importance of the therapist-patient relationship in successful therapy. This information could possibly clarify therapists' dichotomous feelings about how much distance they must keep with their patients. On the other hand, results of research in task performance seem to support the observations made within occupational therapy. There are similar aspects between performing a task and undergoing therapy which are thought to influence their success: commitment to task/therapy, compliance with methods/therapy, and improvement in performance/rate of recovery.

Butler (1987) examined the properties of evaluation techniques in performance on a divergent thinking task. Testing 200 fifth and sixth graders, she divided participants into one of four feedback conditions: a comments group, a grades group, a praise group, and a no-feedback group. In the comments group, participants were given a one sentence comment as feedback: "You thought of quite a few ideas; maybe it is possible to think of more different ideas" (Butler, 1987). For the grades group, scores of performance were converted into a grade. Participants in the praise group were told the phrase "very good." In the no-feedback group, participants

received no evaluation. Butler (1987) asked participants to fill out various post-test evaluations, which would indicate task- and ego-involved motivational perceptions. Task-involvement was marked by satisfaction in an activity and a desire to improve on one's previous performance. Ego-involvement was concerned with performance relative to the performance of others. Comments promoted the highest task-involvement and the highest level of interest in the task. Grades and praise promoted ego-involved beliefs, meaning that students became more concerned with comparing their performance to other students. It is also interesting to note that participants receiving praise or comments rated their self-perceived success as higher than participants receiving grades. Comments also yielded higher scores in students than any of the other feedback conditions.

Performance evaluation, however, is not the only factor that seems to influence task performance. Results of Crisson, Seta and Seta's research (1995) on the performance of memory tasks indicate that performance rates are improved if performance is not only evaluated but also watched. The presence of people affects task performance. Crisson, Seta and Seta (1995) used a memory task that involved remembering three-digit numbers. Participants were divided into three conditions: a) performance was not observed and not evaluated, b) performance was not observed but was evaluated, and c) performance was observed by a four-person group and evaluated. With increasing evaluation and observation, participants were willing to expend more effort on the task, thus increasing their rate of performance. Early research on audience effects (Innes & Young, 1975) found concurring results. While this type of task performance research gives clues into the possible effect of the presence of a therapist on a client, research on emotional involvement on task performance is scarce.

Additionally, the qualitative research that has been conducted in the area of therapy focuses on the impressions of the therapists, not the patients. Observed recovery rates and

patient-therapist interactions are defined by the therapists, as seen in the telephone interviews of Rosa and Hasselkus (1996), and the interviews of Lyons (1997). Patient observations and evaluations within this body of research are sorely missing. Lyons (1997) suggested that opinions of patients may have been largely discouraged, or even discounted, because they pose a threat to the therapist's sense of authority. Since the patients are being "treated," they are regarded as unable to make judgments as to the effectiveness of therapy (Lyons, 1997). Clark, Krupa, and Scott (1993), in their evaluation of client-focused research, also noted that client evaluations do not reflect true client opinions. The methods of collecting information yield favorable results because clients feel pressure to please the therapists. Accurate and honest patient evaluations are necessary, however, in order to assess the true effectiveness of therapy. After all, patients are consumers, paying for the services they are receiving. And in light of the fact that occupational therapy is a "helping" profession, it is important to ensure that the services provided are truly and effectively improving patients' quality of life.

The purpose of this research, then, is to quantitatively assess the effectiveness of interpersonal interaction in improving the task performance of the aged. Although the current research cannot replicate a patient-therapist relationship, the elements that define this relationship can still be investigated. Within this study, both the researcher's and the participants' evaluations will be considered in order to define improvement in the performance of the task. According to past research, increased involvement of a therapist with a patient seems to increase the rate of rehabilitation. Consequently, a participant's performance on experimental tasks might also benefit from an increased level of involvement with the experimenter. By defining three levels of interaction, one with very limited interaction, one with physical interaction, and one with emotional interaction, changes in the quality and improvement of performance should be evident with increasing interaction.

Method

Participants

Twenty-four geriatric residents from nursing homes will be recruited for this research. Consent will be asked of both the participant and the participant's family. Participants will also be screened for any mental or physical health problems that could make participation in the study difficult. The experimenter will equally and randomly distribute participants to experimental conditions.

Design

Three levels of interaction will be tested: Limited Interaction, Physical Interaction and Emotional Interaction. In the Limited Interaction Group, the experimenter will simply explain the task, situate the participant, and then leave. In the Physical Interaction Group, the experimenter will remain in the room during testing, but will engage the participant in only limited and necessary conversation. In the Emotional Interaction Group, the experimenter will observe the participant's performance, providing specific verbal feed back. Additionally, the experimenter will engage the participant in conversation to establish an emotional rapport. Topics of conversation and types of feedback will be pre-determined and remain as constant as possible for all participants within this group. In addition, the experimenter will present the research in such a manner as to emphasize the need of participants' collaboration on the project. The goal is for participants to view the project as a joint effort, and to feel actively involved in the process of the research.

Materials

Parquetry Blocks

The design of this study will be adapted from Neistadt's 1994 research exploring techniques in block design. For this task, blocks are assembled into a specific pattern using two-

dimensional color design cards. The block assembly kit[1] consists of 32 thin wooden blocks which come in three shapes (squares, triangles, and diamonds), and six colors (red, blue, purple, orange, yellow, and green). As in Neistadt's (1994) research, the various design cards will be categorized into levels of difficulty using Royer, Gilmore, and Gruhn's finding (1984) that increased diagonals in a design increase the level of assembly difficulty.

Questionnaires

Four sets of questionnaires will be developed for this research. The first will investigate participants' perception of the task: difficulty of task, stress level evoked, feelings towards task, and improvement over previous session. The second questionnaire expands on the questions of the first. Participants will be asked the degree to which their performance as a whole was influenced by factors such as their natural ability, practice, interactions with the experimenter, and the fact that they were timed. Questions will also ask participants to indicate to what extent their efforts were affected by such variables as their desire to improve. The third questionnaire will be given both as a pre-test and as a post-test to assess the emotional state of the participant and changes therein (e.g. depression). This depression scale will be a five-point Likert scale conversion of the Yesavage 30 question Geriatric Depression scale. Yesavage's (1983) scale asks patients to assess their current mood and addresses topics such as life satisfaction, fear, energy, and hopefulness. The final questionnaire of the present study will be given to an attending nurse or aide, to evaluate any changes in the appetite, sleeping habits, interests in life, and general level of activity of the participant.

Procedure

Participants will be randomly assigned to the Limited, Physical or Emotional Interaction Group. Participants will attend one practice session and four additional sessions. Participants will

[1] Available: Learning Resources, Inc., 380 N. Fairway Drive, Vernon Hills, Illinois 60061 U.S.A. 1-800-222-3909

also a schedule a fifth session which will in actuality be a debriefing where the researcher can answer any of the participant's questions during an informal luncheon.

During the practice session, the task will be explained to the participants and they will receive instruction in basic design techniques. Participants will then complete two easy design patterns in order to practice assembly. Designs are termed "easier" if one decreases diagonals and increases amounts of color, as well as if one increases the number of block boundary lines in the design pattern. Participants will also fill out their depression scale questionnaire. Depending on the fatigue and emotional response of the participant, only half of the questionnaire may be completed the first session. The second half can be finished at the next meeting. For subsequent sessions, performances will be timed, and participants will be asked to complete four design patterns: two easy designs and two more difficult designs (designs with less color, more diagonals, and less boundary lines). Each design is expected to take 1 to 12 minutes to complete; however, it should be taken into account that this time could be substantially longer when working with a geriatric population. According to Neistadt (1994), previous research found that the amount of time needed for assembly increases with increasing age. The same design cards as in Neistadt's research (1994) will be used, categorized according to her predetermined levels of difficulty. Research by Bobb (1999) concurs with Neistadt's classification; designs ranked "easier" by Neistadt were in fact completed faster than "harder" ones.

Participants will be given two different sets of designs to complete. For sessions one and three, participants will receive set A of the model design cards (two easy and two more difficult designs). For session two and four, participants will receive set B, which will be comparable in difficulty to set A, having two easy and two more difficult designs, but will consist of different design cards. Results between sessions on each set of design cards will then be compared. Having different sets of design cards is desirable in order to hopefully weaken any practice

effects. Previous research by Bobb (1999) using parquetry blocks found that participants did in fact significantly improve their performance between the first and third session, indicating a practice effect does occur.

For the timed sessions, a shield will be constructed around the design box using two manila folders. The shield will hide the assembly pattern from the participant's sight until they are ready to begin assembly. Participants will also be given a bell to ring when they finish the design. The experimenter will start timing as soon as the first block is laid, and stop timing as soon as the last block is laid and/or the participant rings the bell. The process will be repeated until all four designs are completed.

At the end of the first session and each subsequent session, participants will fill out a short self-evaluation to determine their interest in the task and their impressions of the task difficulty, as well as to assess their self-perceived performance. Upon completion of the last session, participants will answer additional questions concerning the effect of the experimenter and the effect of other variables on their task performance.

The experimental manipulations will result in different interactions between the participants and the experimenter. For the Limited Interaction group, the participants will be left alone to complete the timed block assembly; the experimenter will review instructions for the block assembly, answer any questions the participant has, and leave the room/area. The experimenter will try to stay in the proximity of the participant or the testing room in case the participant needs her. However, the experimenter will seem to be engaged in other work, and will stay out of direct sight, to decrease likelihood of the participant engaging her in conversation. The experimenter will try to only reenter the room/testing area in order to change the design pattern. This level of interaction will serve as the control group.

For the Physical Interaction group, the experimenter will give instructions about the block assembly and then remain in direct view and in close proximity to the participant while they complete the task. The experimenter will avoid eye contact in order to discourage the participant from engaging her in conversation. No feedback on their performance will be given, and no additional time will be spent in casual conversation. This interaction level should most closely correspond to the professional "impersonally personal" attitude noted in Peloquin's (1990), Crepeau's (1991) and Lyons' (1997) research.

For the Emotional Interaction group, the experimenter will focus on establishing a rapport with the participant by engaging her in conversation before and after the sessions. Extra time will be planned before and after the sessions for the experimenter and the participant to interact. This could possibly be brought about by asking the participant to wait a few moments while the experimenter sets up the session. The experimenter will then offer the participant a magazine to read. Questions could later be asked about the magazine as a conversation starter. Other topics of conversation could be the participant's home state, their plans for the holidays, and if they have any grandchildren. During the actual testing, the experimenter will remain in the room/area. The experimenter will also give the participant verbal feedback on her performance, telling her how fast she completed a design as well as pointing out her strengths in assembly technique. This "emotional interaction" is intended to simulate Roger's (1957) conditions for empathy, stressing Cook and Moll's (1996) idea that tasks are actually a means of establishing a deeper patient connection which could promote effective therapy (Tryssenaar, 1997).

At the end of the four sessions, participants will fill out another emotional inventory questionnaire. Their attending nurse will fill out his/her evaluation of possible changes in the participant's behavior.

A fifth session will be planned for all participants, but will turn into an unexpected luncheon. The purpose of this informal meeting will be two-fold: One, it will provide a relaxed environment for detailed debriefing. Two, it will help ease any feelings of injustice some participants may have because the experimenter spent more time with other participants. This will hopefully not be at issue, since careful planning should be able to avoid participants perceiving any difference in treatment. However, ending the research with a luncheon would leave all participants, regardless of their interaction level, with a positive memory of their experience. This seems to be in accord with the spirit of this study, namely to advocate a caring and genuine interaction with patients.

Expected Results and Discussion

Because of the high value placed on interpersonal skills in therapeutic interventions, it is believed that the Emotional Interaction Group will display a better emotional state, and an improved, more interactive way of life after the sessions. The Emotional Interaction Group should also evaluate the experimenter as having a more positive effect on their performance, and should be more positive towards the block assembly sessions, concurring with previous research findings (Bobb, 1999). Less changes are expected within the Physical and Limited Interaction Groups. There should be improvement from the first to the last sessions, showing a practice effect, as well as significantly faster performance on the easier designs, confirming design accuracy (Bobb, 1999). There may not be any significant difference in the improvement of block assembly accuracy between the three groups. This will be largely due to the fact that participants may not have a physical disability needing rehabilitation, which would respond to an activity like block assembly. However, for the Emotional Interaction Group, the block assembly serves as a way to establish emotional rapport with the participant. This activity could then help improve the

emotional wellness of the participant, reflected in possible life style changes and questionnaire scores.

Analysis of the data will include ANOVAs of participant's assessment of their assembly performance. Least Squares Methods should show any appreciable difference in scores between the sessions. ANOVAs will also be performed on the recorded speed of performance and accuracy of block assembly. In addition, the difference in the depression scale from pre- to post-study will be investigated. There may also be a way of quantifying the primary nurse evaluations of the participants.

If the results of this study should reach significance, this could quantitatively support observations that a close rapport between therapist and patient helps the therapeutic process. On the other hand, results not reaching significance would still be important, possibly indicating that in fact another variable of the therapeutic relationship is key in bringing about rehabilitation. Several studies have discussed the importance of a patient's collaboration in developing a goal towards which to work. It is possible that a better relationship with a therapist facilitates communication with the patient so that just such a joint goal can be developed.

CHAPTER 3

Study #3: Winter

Background

The researcher started running sessions over the winter break during December and January. The Laurels of Willow Creek in Richmond, Virginia, was the first retirement facility recruited for the study. Together with the Rehabilitation Services Director and the Activities Director, 13 possible participants were chosen from among their residents. Verbal consent of family members was received via telephone for all possible participants who were not their own responsible party. In the end, only five women participated in the study (See Appendix D for Participant Profiles).

Problems and Changes in Design

Once testing had started, the methodology was significantly changed to accommodate unexpected difficulties that arose from working with the geriatric population. Participants had, for the most part, serious physical impairments (see Appendix D) so that they could not be left alone to complete designs. They were also unable to read questionnaires, or fill them out. While cognitively sound, their physical disabilities were to such a degree that completing more than one block design became taxing. These problems became apparent after the first practice session, so that immediate revisions were implemented. Following are the difficulties which were encountered, and the revisions in methodology which were made:

Levels of Interaction

The researcher encountered a greater level of disability in participants than expected. Because of the nature of the geriatric population (advanced impairment for all participants), none of them were able to read or fill out questionnaires independently (see Appendix B for questionnaires). All questionnaires had to be given orally. This led to a substantial confounding

because the interchange between the participant and the experimenter was significantly increased, regardless of the participant's level of interaction. The questionnaires, especially the depression questionnaires, led to sharing of very personal information and participants often went into great detail to specify their answers. This sharing created a closer rapport with each participant, such that limiting interaction was no longer possible.

A possible way of avoiding this confounding would have been to have an assistant orally administer the questionnaires. However, the primary investigator did not have another researcher available. Therefore the distinction between the primary investigator as the "block researcher" and someone else as the "questionnaire researcher" could not be made. In the end, the level of interaction that was supposed to be limited received more attention than planned. The ultimate outcome was that the researcher was forced to disband the levels of interaction, dealing with participants only on the highest level of interaction, Emotional Interaction.

Number of Participants

Originally 13 participants verbally consented to participate. However, several of them were severely hard of hearing, or had such impaired eyesight, so that they did not meet the experimental criteria. The nursing home had picked residents that were long-stay to ensure that they would not leave before the end of the research. However, the long-stay residents turned out to be more handicapped as well. The number of participants dwindled to 7, and then two of them discontinued participation. This left only 5 participants, and it was difficult to complete the study even with those few. One of the participants lost her son three days before research started. This left her too emotionally distraught to complete the depression questionnaire. Complete data were therefore only obtained from 4 participants.

Nursing Home's Schedule

The hardest part of the winter research was meeting with all the participants and finding suitable times for the half-hour it took for the research session. Mornings were difficult because of daily routines and doctor's visits or rehabilitation sessions. Sessions could not start until the afternoon which in turn conflicted with regularly scheduled activities. This left only a very short window of time in which to conduct the research sessions.

Puzzle Designs and Questionnaires

Residents could not complete more than one design per session because they would get tired and their attention would wander by the time the questionnaire was administered. Puzzle sessions also had to be reduced to 3 instead of 4 because of time constraints (see Appendix B for designs).

Perhaps the most valuable lesson during this period of testing was the discovery that the questionnaires needed to be reworded. The final questionnaire was too confusing for the residents to complete and was finally abandoned because it needed significant rewording (see Appendix B). All participants were confused by the language and meaning of the questions. For example, one question asked participants to evaluate the truth of the following statement: "Success in my performance was due to my natural ability." The awkward phrasing of the sentence and the relatively elevated level of language easily confused participants so that they were unsure what was being asked of them.

Spacing of Sessions

Because of the holidays, there was a weeklong break after the first week of research. This break may have skewed results and resident's impressions as participants could have unlearned some of their puzzle techniques because of disuse, and could have forgotten their perception of the researcher. After this break, the researcher continued visiting the nursing home for another week, for a total of two weeks of research.

Nursing Evaluations

The final problem encountered concerned the Nursing Evaluations (see Appendix B). These may not have been completed accurately because the head nurse forgot to distribute the questionnaires. After being reminded, she rushed the process, insisted on getting them done within a half-hour for the researcher. This hastening may have jeopardized accuracy in filling out evaluations. It is also not certain whether the right primary nurses received the evaluations. In addition, the questionnaire was misleading because the researcher did not specify over what time period the changes should have been noted. It is very possible that the nurses were recording changes seen over their whole acquaintance with the patient, not just over the winter holidays (the time during which the research was done).

Winter Study Assessment

This research attempt probably failed to produce usable quantitative data. However, as a pilot study, the research was invaluable, helping to refine the methodology of the current study in practical terms. Primarily, the Winter Study highlighted problems in the design of the questionnaires and evaluations. It also became clear that the experimenter needed an assistant in order to administer questionnaires. Since many of the elderly could no longer read, the researcher read questionnaires to them, which caused her to interact more with certain participants than anticipated. The researcher also realized the limitations of working with a geriatric population; while the research was expected to be time consuming, the actual time commitment had been greatly underestimated. Participants could not commit to a meeting time because they frequently forgot activities they planned on attending or appointments they had made. On some days, the researcher could barely complete a single participant's session because of sudden session cancellations. (See Appendix D for further observations on the Winter Study).

CHAPTER 4

Study #4: Spring

Background

The first half of the spring semester was spent revising questionnaires, evaluations, and consent forms (see Appendix C)). Revisions included rewording questionnaires to make them more easily understandable (e.g. "I put effort into the task because I wanted to improve past performance" was reworded to "I wanted to improve my performance"). In addition, each Likert-like scale was assigned a qualifying descriptor to make oral administration of questionnaires easier (e.g. under the number one, "not at all" might be printed; under the number 5, "very" might be printed). Another facility (or facilities) also had to be recruited at which the research could be conducted. This latter objective proved to be very difficult. Several potential contacts were made, but in the end, only one senior center consented to allow the current research to be done at their facility. Another two retirement homes had seemed promising, but later changed their minds.

The Johnson Senior Center had two buildings, each with a separate director. The directors recruited two residents in each of their respective buildings for the research. The four participants were tested over the next two weeks (see Appendix D for Participant Profiles).

In addition, the researcher decided to use an assistant to give most of the questionnaires. While the researcher would continue to administer the individual session questionnaires, the assistant would be responsible for giving the depression scale as well as the overall evaluation questionnaire to the participants. The psychology department placed one of their departmental research assistants at the researcher's disposal.

Assistant Problems

One of the largest difficulties was finding a common time for researcher, assistant, and participant to meet. The class schedules of the researcher and the assistant disagreed, and the senior center had various activities, just like the nursing home during the Winter Study, which could not be interrupted. In the end, the researcher had to find additional alternate assistants to help in the research, which proved time consuming but worked out well in the end.

Methodology

An initial meeting with potential participants was set up. During this visit, the researcher explained the general research methodology, had participants provide written consent, and also allowed participants to practice the block assembly board. The first experimental session was scheduled, and participants were informed that another researcher would also be visiting at that time in order to ask them confidential questions.

During the following session, participants were first asked to respond to the depression questionnaire. The research assistant orally administered the questionnaires after the main researcher had left the room; the researcher was not present during the questioning. Each participant was also given a copy of the questionnaire in large (14 point bold font) print so that they could read along with the researcher.

After the depression questionnaire was completed, participants met the researcher in the dining hall where a flat table was available for the block assembly. It is important to note that the dining hall was set off from the rest of the retirement center and was empty during the sessions, providing privacy during testing. The experimenter administered the same block assembly patterns used in the winter study (see Appendix B).

For the Emotional Interaction group, after a period of leisurely conversation, participants were given parquetry block design A to complete. Their performance was timed, and timing

began as soon as the participant picked up the first block. Timing stopped when the last block had been laid. During the session, the experimenter sat in close proximity to the participant and would occasionally interject short comments of encouragement and feedback as the participant completed the design (e.g. "Good." "That's right." "Well done.") Longer feedback was avoided during the design completion so that the participant would not be distracted from the task.

After the session, the experimenter would highlight techniques which seemed to have helped the participant or had worked especially well for them. The researcher verbally administered the session evaluation questionnaire, once again giving participants a large-font copy so that they could read along. The researcher then spent up to 20 minutes in general conversation with the participant, asking them about their daily activities, plans for the week, their family and friends, their memories.

For the Physical Interaction Group, interaction before and after sessions was limited as much as possible. The researcher tried to restrict the amount of personal information she shared, as well as the interest she showed towards participants (e.g. not asking them as many questions about their lives). During the sessions, after setting up the puzzle, the researcher sat across the room from the participant, still in eye range but not in full view. The researcher would engage in seeming "work," ignoring the participant during the block assembly.

These block design sessions were completed twice more: for the second experimental session, block design B was completed, and for the third session, block design A was again administered. After the final session, participants were again told that an additional experimenter would be coming to ask them questions. The same assistant who had originally administered the depression questionnaire was used. Participants were administered the same depression questionnaire, and were additionally asked a series of questions to evaluate the experimenter and the overall research process (see Appendix C).

After all data had been collected, the researcher set up a last appointment with participants for a debriefing session. Debriefing was scheduled as an informal visit, and the researcher brought flowers, cookies and a thank-you card to participants. The experimenter explained the research to participants in more detail, and any questions were answered. The rest of the session was spent in friendly conversation to ensure pleasant memories of the research experience for participants. (See Appendix D for further observations on the Spring Study).

CHAPTER 5

Results, Analyses and Discussion

Results/Discussion

The level of interaction between experimenter and participant served as the independent variable for the experiment. Dependent variables were the participants' responses on the depression and session questionnaires as well as their speed in block assembly.

Originally, three degrees of interaction were to exist: Limited Interaction, Physical Interaction, and Emotional Interaction. However, in the winter pilot study, the levels of interaction had to be eliminated, and participants were only treated as an Emotional Interaction group because all participants had received the same amount of interaction: participants could not read nor fill out questionnaires on their own, and so the experimenter read questionnaires to all participants, causing more interaction with the Limited Interaction group than anticipated. In the spring study, because participants needed to be supervised due to their level of impairment, the Limited Interaction group was eliminated. Ultimately, two levels of interaction were then implemented: an Emotional Interaction group and a Physical Interaction group. It is questionable, however, whether participants in the Physical Interaction group perceived the experimenter as she intended to portray herself.

Anecdotal data, as well as responses on questionnaires, indicate that the two participants assigned to the physical interaction group during the spring study actually felt the experimenter to be quite involved and helpful, connecting with them in significant ways: on the post-sessions questionnaire, when asked if the researcher had a positive effect and was helpful, one of the participants felt this was very true, the other that this was sometimes true. After the experimental debrief, both participants were asked if they at any point felt that the researcher had distanced herself from them. Both participants denied ever having felt slighted, and one of them

commended the researcher for being genuine and sincere. Both expressed deep regret that the sessions and visits would be over and requested the researcher to come back for future visits. The researcher was also admonished not to forget them, which indicates that participants indeed felt a connection had been made with the researcher.

In light of this fact, and because of the low sample size of the population, the following data were analyzed in three different ways: a) spring study results as two levels of interaction (Emotional and Physical Interaction) as originally proposed, b) spring study results as one level of interaction (Emotional Interaction only) in light of evidence that different levels of interaction were not established, and c) spring study and winter study data combined as one level of interaction (Emotional Interaction only) to help enlarge the sample size. Results obtained in this study are presented in relation to three components: findings supporting a change in participants' emotional well-being, findings supporting a change in participants' relationship with the researcher, and findings supporting a change in participants' physical well-being (e.g. reaction time).

Emotional Well-being

It was hypothesized that a closer rapport between participant and researcher would influence the emotional well-being of the participant. The main indicator of a change in emotional well-being were the answers to the depression questionnaires administered pre- and post-test.

Depression questionnaires.

The questions of the depression scale (see Appendix C) asked participants to assess their feelings on topics such as life satisfaction, fear, energy, and hopefulness. Questions were based on a Likert-like scale of 1 to 5. Each number was qualified (e.g. the number one was titled "strongly disagree") to make oral administration of the questionnaire easier and more consistent.

As questions were originally phrased, low scores sometimes indicated positive and sometimes negative responses. For example, the sentence may have been "I think it is wonderful to be alive now" in which case a number of 5, labeled "strongly agree," would indicate a positive response. However, if the sentence was "I often feel helpless," then a score of 5 would indicate a negative response. Therefore, for coding and analysis purposes, the depression scale was adjusted to account for the mix of positive and negative questions: All responses from positively phrased questions were transposed so that participants' responses would consistently reflect the same attitude (e.g. lower numbers always indicated a more positive attitude). Responses to each of the questions were analyzed with the following results:

Adjusted pre-test and post-test depression scale scores of the spring study were entered into a 2 (pre-/post-test) X 15 (depression question) within groups analysis of variance (ANOVA). A within ANOVA was used, rather than another type of analysis (e.g. a t-test), because this would have required a large number of individual t-tests to be made (N=15). Conducting 15 separate analyses would have made a Type I error more likely. However, by conducting a within ANOVA, the entire alpha level remained constant at .05. The results yielded a significant main effect for questions, $\underline{F}(14,28) = 2.386$, $\underline{p} < .05$ (see Appendix E, Table E1). Mean trends suggest that some negative statements such as "I have dropped many of my activities and interests" and "I lack a lot of energy" received higher scores of agreement than other questions on the depression scale (mean "activity" statement = 3.5000, SD = .926; mean "energy" statement = 3.250, SD = 1.488). No other questions were found to be significantly different.

Analysis of the spring study depression scale data as a 2 (pre-/post-test) X 15 (depression question) within groups ANOVA treated as the Emotional Interaction group only for all data, showed the same significant main effect for question, $\underline{F}(14,42) = 1.949$, $\underline{p} < .05$ (see Appendix E, Table E2). Again, no other interaction was found significant. Mean trends, however, show a 1.5

point drop in responses to question 7 ("I feel happy most of the time"). Mean pre-test score for this question was 3.0 (SD = 1.414) while the post-test mean score was 1.5 (SD = .577) indicating that participants rated this question more positively at the end of the experiment. Mean scores also showed a 1.0 point drop in responses to question 11 ("I think it is wonderful to be alive now") where pre-test mean scores were 2.75 (SD = 1.500) and post-test mean scores were 1.75 (SD = .500), again indicating more positive responses at the end of the experiment.

When responses of both the spring and winter study depression scale data were analyzed in a 2 (pre-/post-test) X 15 (depression question) within ANOVA using all data as Emotional Interaction group data, the question main effect was once more significant $F(14,98) = 2.335$, $p < .01$ (see Appendix E, Table E3). Mean trends for questions 7 and 11 continued to suggest more positive responses at the end of the experiment: for question 7, mean scores dropped from 2.0 (SD = 1.414) to 1.25 (SD = .463); for question 11, mean scores dropped from 2.0 (SD = 1.309) to 1.38 (SD = .518). This trend is especially important in light of the fact that for most trends, mean scores slightly *increased* from pre-test to post-test. This would indicate that for most questions, participants' agreed more with negative statements after the research than at the beginning of the research.

It seems then that responses to questions which inquired about *physical* states (energy and activity level) tended not to improve over sessions, while responses to questions about *emotional* states did. One possible explanation for this trend, assuming that interaction with the experimenter would cause both physical and emotional changes to occur, is that the two-week duration of the experiment was only long enough to affect a change in emotional but not physical well-being.

Individual session evaluations: Interest in task.

The individual session evaluation questionnaires asked participants to rate their feelings towards the task, to evaluate the challenge and stress level of the task, and to note any improvement in their performance (see Appendix C). For each question, the change in responses over the three sessions was investigated. Responses were entered into a 2 (levels of interaction) X 3 (session) mixed factorial ANOVA for the spring study, and a significant main effect for interest over the sessions was found, $F(2,4) = 9.000$, $p < .05$ (see Appendix E, Table E4). Mean values indicate that the interest of all participants dropped from session 1 to session 2 and then increased again in session 3 (session 1 = 4.500, SD = 1.000; session 2 = 3.750, SD = 1.258; session 3 = 4.500, SD = 1.000). Variables of challenge, stress, feelings towards task, success, and improvement were also examined in similar analyses, but no significant results were found.

This variable of interest was also found to be significant when evaluated in a 1-way within-subjects ANOVA, $F(2,6) = 9.000$, $p < .05$ (see Appendix E, Table E5), with the same trend of dropping from session 1 to session 2 and then increasing again in session 3. When data from the winter study were also included in a 1-way within-subjects ANOVA, marginal significance was reached as well, $F(2,14) = 3.723$, $p = .0505$ (see Appendix E, Table E6). Again the pattern of decrease from session 1 to 2, and then increase in session 3, was shown (session 1 = 4.625, SD = .744; session 2 = 4.000, SD = 1.069; session 3 =4.625, SD = .744).

If participants had known exactly how many sessions of block assembly were to be conducted, it could be believed that this trend was due to a serial position curve -- evaluating the first session and the most recent session as more interesting than the middle session. However, participants were specifically not told how many sessions remained. The pattern in perceived interest could possibly be due to the different puzzle design that was given on session 2, as session 1 and session 3 both used the same puzzle design. However, puzzle designs were all of

the same level of difficulty, and visible pattern differences were minor. Further block assembly sessions would be necessary in the methodology to determine whether interest would continue a pattern of waning and waxing.

Participant-Experimenter Relationship.

The second component that was expected to show a change over the sessions was the quality of the relationship between participant and experimenter. Both the Individual Sessions Evaluations and the Post-Sessions Evaluation were to investigate this trend.

Individual session evaluations: Perceived stress.

There was a marginally significant main effect for participants' evaluation of stress on the individual session evaluations, $F(1,2) = 16.000$, $p = .0572$ (see Appendix E, Table E7). The mean values for the Emotional Interaction group (mean = 1.000, SD = 0.000) were lower than the mean values for the Physical Interaction group (mean = 2.333, SD = 1.211). This could possibly indicate that interactions with the experimenter caused less anxiety for the Emotional Interaction group, so that the experimenter may have portrayed different levels of interaction to the two groups as she originally intended.

Individual session evaluations: Perceived improvement.

A mean trend for the variable of improvement showed that the Emotional Interaction group (mean = 4.333, SD = .516) evaluated themselves as improving more than the Physical Interaction group (mean = 3.333, SD = .516). This again suggests that feedback and communication between experimenter and the Emotional Interaction group fostered an encouraging environment because later data will show that both the Emotional and Physical Interaction group actually improved over all three sessions.

Post-sessions evaluation.

While no main effects for the Post-Session Evaluations (see Appendix C) were found to be significant, mean trends suggest that findings generally supported the original hypothesis. Mean trends of the Post-Sessions evaluation suggested that participants in the Emotional Interaction group (mean = 5.000, SD = 0.000) evaluated the experimenter as having a more positive effect on their performance than did the Physical Interaction group (mean = 4.000, SD = 1.414). The Emotional Interaction group participants also evaluated the experimenter as having no negative effect on them (mean = 1.000, SD = 0.000). The Physical Interaction group on the other hand felt that the experimenter did have a slight negative effect on them (mean = 3.000, SD = 0.000). Whereas the Emotional Interaction group indicated the experimenter was never unhelpful (mean = 1.000, SD = 0.000), the Physical Interaction group found the experimenter just slightly unhelpful (mean = 2.000, SD = 1.414).

In view of significant findings indicating that the emotional well-being of participants in the Emotional Interaction group improved over the experiment, the above mean trends could indicate that this change was due to the perceived positive interactions with the experimenter. The small sample size of the research make generalizations difficult; however, the pattern of results would be grounds for further, more in-depth, research.

Physical Improvement

The last variable expected to show changes over the experimental sessions was the physical improvement of participants on the block assembly. All participants were expected to improve on the block assembly with practice; however, it was hypothesized that participants in the Emotional Interaction group would improve more than participants in the Physical Interaction group.

Block assembly speed.

In agreement with the expected practice effect, performance speed on the assembly board for the spring study significantly decreased from the first to the third session, $F(1,2) = 33.138$, $p < .05$ (see Appendix E, Table E8) where the mean for session 1 was 253 seconds (SD = 90.646) and the mean for session 3 was 191 seconds (SD = 63.922). This result also held true when data were analyzed together with the winter pilot study performance speeds, $F(1,7) = 6.449$; $p < .05$ (see Appendix E, Table E9) (mean session 1 = 335.5 s, SD = 141.819; mean session 3 = 282.0 s, SD = 148.300).

Conclusion

While the current study could not conclusively support its original hypothesis, it does provide insights into working with older persons. Small sample sizes as well as confounding of interaction levels made data collection difficult. Although the data cannot be generalized to geriatric populations, they do reveal trends which suggest that interaction with the researcher could influence at least the emotional well-being of a participant. This research also identified many variables which make research with older people difficult, and is therefore invaluable as a pilot study in the area of task performance.

Future Research

The results and methodological difficulties of the current study help clarify why research on variables influencing geriatric task improvement is limited. Because of physical handicaps, working with participants can be difficult, making it hard to interact with geriatric participants on a limited level. These difficulties also help explain why qualitative data abound, while quantitative data in this area of research are still missing. The current study, while setting out to collect largely quantitative data, has also had to rely largely on qualitative and anecdotal data to investigate trends in the task performance of a geriatric population.

One possible way to avoid having to develop artificially created levels of interaction would be to rely on actual patient-therapist relationships for data collection. Research could be done in rehabilitative departments of hospitals and clinics. Questionnaires administered to both the client and the occupational therapist would determine the closeness of their relationship, and corresponding data charting improvement over sessions would help investigate any links between the therapist's level of interaction with the client and the client's rate of recovery.

CHAPTER 6

General Discussion/Broader Implications

Initially this project set out to provide quantitative data to support an emerging humanistic approach within occupational therapy. Past research (Rosa & Hasselkus, 1996; Cook & Moll, 1997; Lyons, 1997) has established the need for a greater patient-therapist rapport with qualitative observations and anecdotal data. However, significant quantitative data were missing which would support the thesis that effective therapy is linked to the type of relationship a therapist has with her client.

The current study investigated these trends within an aging population. Results of the project highlighted why quantitative data were hard to find and why researchers have depended largely on qualitative observations especially for geriatric populations (Ronnberg, 1998; Hatfield, 1999; Glaser, 1998): One of the main difficulties in working with elderly participants was their chronic illnesses and general decline in health. Because the aged varied greatly in their degree of physical impairment, consistent collection of data was difficult. For some participants, assigned tasks may have been too difficult while for others the task may have been too easy. If the task was beyond their level of ability, participants easily became frustrated; if the task was too simple in nature, participants quickly became bored.

For example, participants in the winter study had greater handicaps than the participants in the spring study. Spring study participants would probably have been able to complete more puzzles per session, and also more difficult designs. After research had been completed in the spring, the researcher offered the Emotional Interaction group more complex designs to complete. Both participants expressed that they enjoyed the additional challenge and that the previous puzzles had seemed very easy to them. It would have been difficult, however, to screen

participants in order to ensure that they are all on the same level of functioning. Screening would have also decreased the number of participants. As the current study discovered, finding enough participants who are older yet higher functioning is already a challenge.

Another difficulty in working with the aged is that in general, residents in nursing homes do not receive a lot of individualized attention (see Ronnberg, 1998). Any attention that the researcher therefore gave to participants, regardless of how little, may have seemed important to them. Keeping stringent differences between levels of interaction was therefore nearly impossible to maintain in the current study. It is plausible that if the levels of interaction could have been kept separate, trends in the data would have reached significance, supporting the study's original hypothesis.

This research was nevertheless valuable for me personally. One of the greatest values of this research experience was that it helped prepare me for a possible future career in occupational therapy. I experienced firsthand some of the trials that accompany work in retirement facilities. Because of the relationships that I developed with participants, many of them felt at ease sharing their frustrations with me about their life in a nursing home. This intimate glimpse into their struggles will hopefully help me to be sensitive to clients that I may some day be working with.

The experience also strengthened my communication skills. I learned how to speak clearly with participants and to discern how to communicate best with participants who were hard of hearing. Elderly participants seemed especially confused by technical language, and I learned to translate my study into laymen's terms. I also noticed that participants seemed to take cues from my body language and voice inflection. If I seemed more at ease and positive, participants seemed to relax and be more willing to complete research requirements. On days where I was more stressed and less sure of how I was going to conduct the session, participants

also seemed to feel less at ease. Bedside manner seems extremely important when working with the elderly.

Interacting with the staff and directors of nursing homes additionally helped me improve my ability to communicate and be assertive. I needed to learn a certain diplomacy in order to reassure the nursing homes of my intentions and the purpose of the research. As I spent time with the staff, their views of work in nursing homes made me realize the necessity for extreme patience, and a positive outlook, in their field of work.

The experience I gained from this research will likely have far reaching effects both in my personal and professional life. My work allowed me to explore the field of psychological research while gaining information and developing skills which will be helpful in a career emphasizing the importance of patient-therapist relationships.

From a research point of view, and from the participants' perspective, the study was worth conducting. Overall, despite the problems this study encountered, the research provided useful information. Trends in all four studies consistently suggested that the amount of the experimenter's interaction affected the participant's degree of physical and emotional improvement. The strongest indication for this is again qualitative anecdotes, rather than quantitative data.

Participants' comments at the close of the study highlight how important the relationship with the experimenter had become to them. Almost every participant expressed regret that sessions had ended, and wanted me to continue visiting him or her. One of the participants from the spring Emotional Interaction group observed that what she had appreciated most was my listening to her, and my genuine interest in what she was saying. This participant had experienced a recent fall, and during one block assembly session, chose to discuss her feelings

about her accident. Our interaction seems in-line with the way occupational therapy uses activities, such as the assembly board, to encourage conversation about one's disabilities.

This situation is just one example in which a participant's comments confirmed that I had actually communicated the interest I intended to show. Encountering a person who cared about her created a safe atmosphere for discussing her problems. This sharing could be an important step towards emotional well-being. So for this participant, as for others, the research made a difference.

This research is only the beginning then, having barely delved beneath the surface of what makes a therapeutic relationship effective. Ideas and methodology underwent many changes in order to define the structure of the current study. I would be excited if the project would continue to evolve, and this research could become a master's thesis some day. For me, understanding the essence of effective therapy is essential to improving patient care.

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APPENDIX A

Questionnaires of Study #2

Individual Session Questionnaire

Post-Sessions Questionnaire

Experimenter Evaluation Sheet

Block Designs

Set A
Set B

INDIVIDUAL SESSION QUESTIONNAIRE:

Please take a few moments to answer the following questions, evaluating your session: The questions are followed by a scale of one to seven. Circle the number which most closely matches your opinion.

1. **How interesting did you find the task?**

1	2	3	4	5	6	7
not at all						very

2. **How challenging did you find the task?**

1	2	3	4	5	6	7
not at all						very

3. **How stressful did you find the task?**

1	2	3	4	5	6	7
not at all						very

4. **How would you evaluate your feelings towards the task?**

1	2	3	4	5	6	7
very negative						very positive

5. **How successful do you feel you were in completing the task?**

1	2	3	4	5	6	7
not at all						very

6. **Compared to the last session, how much do you feel you improved?**

1	2	3	4	5	6	7
got worse			not at all			very much

POST SESSIONS QUESTIONNAIRE:

Please take a few moments to answer the following questions, evaluating your session: The questions are followed by a scale of one to seven. Circle the number which most closely matches your opinion.

1. **How interesting did you find the task?**

1	2	3	4	5	6	7
not at all						very

2. **How challenging did you find the task?**

1	2	3	4	5	6	7
not at all						very

3. **How stressful did you find the task?**

1	2	3	4	5	6	7
not at all						very

4. **How would you evaluate your feelings towards the task?**

1	2	3	4	5	6	7
very negative						very positive

5. **How successful do you feel you were in completing the task?**

1	2	3	4	5	6	7
not at all						very

6. **Compared to the last session, how much do you feel you improved?**

1	2	3	4	5	6	7
got worse			not at all			very much

Rate the degree to which each of these factors influenced your performance:

	negative			**neutral**			**positive**
1. interest of the task	1	2	3	4	5	6	7
2. enjoyment of the task	1	2	3	4	5	6	7
3. the experimenter	1	2	3	4	5	6	7
4. the amount of practice	1	2	3	4	5	6	7
5. your ability level	1	2	3	4	5	6	7
6. the fact that you were timed	1	2	3	4	5	6	7

Evaluate the truths of the following statements:

1. **I put effort into the task because it interested me.**

1 2 3 4 5 6 7
not at all true very true

2. **I put effort into the task because I wanted to improve past performance.**

1 2 3 4 5 6 7
not at all true very true

3. **I put effort into the task only to complete the experimental requirements.**

1 2 3 4 5 6 7
not at all true very true

4. **Success in my performance was due to my natural ability.**

1 2 3 4 5 6 7
not at all true very true

5. **Success in my performance was due to practice.**

1 2 3 4 5 6 7
not at all true very true

5. **The experimenter positively affected my performance.**

1 2 3 4 5 6 7
not at all true very true

6. **The experimenter negatively affected my performance.**

1 2 3 4 5 6 7
not at all true very true

7. **How helpful did you find your interactions with the experimenter?**

1 2 3 4 5 6 7
not at all very

8. **How unhelpful did you find your interactions with the experimenter?**

1 2 3 4 5 6 7
not at all very

9. **How well did you know the experimenter BEFORE the experiment?**

1 2 3 4 5 6 7
not at all very

Other comments or clarifications:

EXPERIMENTER EVALUATIONS SHEET

	Session 1	Session 2	Session 3
1. Attitude of participant *before* the task:	positive/negative/neutral	positive/negative/neutral	positive/negative/neutral
2. Start of block assembly:	center/edge/other	center/edge/other	center/edge/other
3. First shape used:	triangle/square/diamond	triangle/square/diamond	triangle/square/diamond
4. Verbalized emotional attitude towards task during assembly?	Yes No	Yes No	Yes No
5. Seems focused on assembly?	Yes No	Yes No	Yes No
6. Attitude of participant *after* the task:	positive/negative/neutral	positive/negative/neutral	positive/negative/neutral

MEASURED TIME: (minutes)

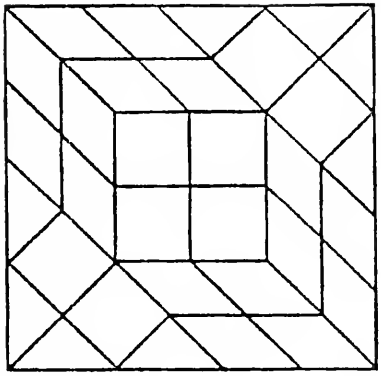
	Session 1	Session 2	Session 3
design 1:			
design 2:			
design 3:			
design 4:			

ACCURACY: (number of blocks misplaced)

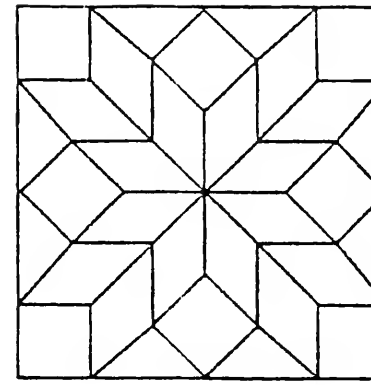
	Session 1	Session 2	Session 3
design 1:			
design 2:			
design 3:			
design 4:			

ADDITIONAL PRACTICE: **YES** **NO**

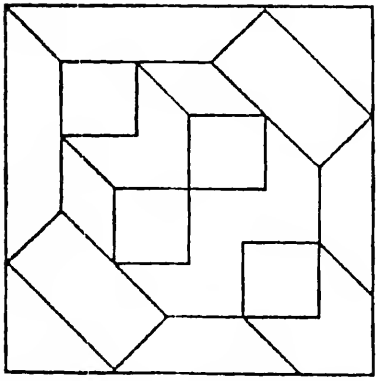
Block Designs set A



design 1 – colored



design 2 – black and white



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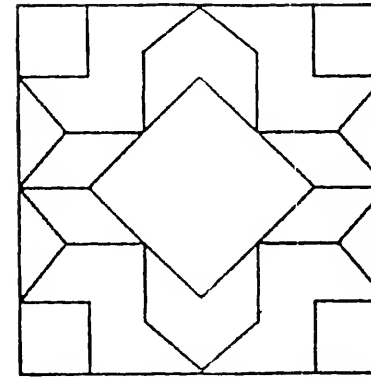

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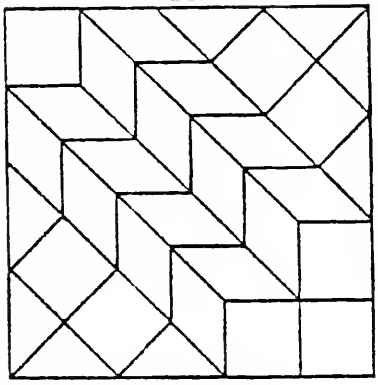
Block Designs set B



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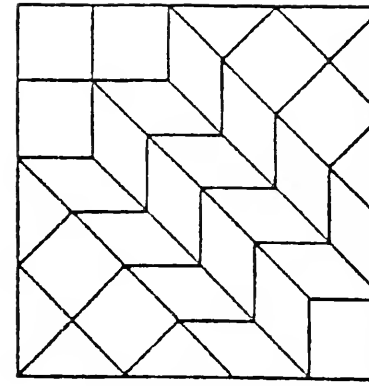
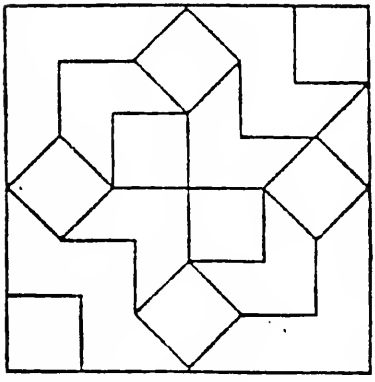
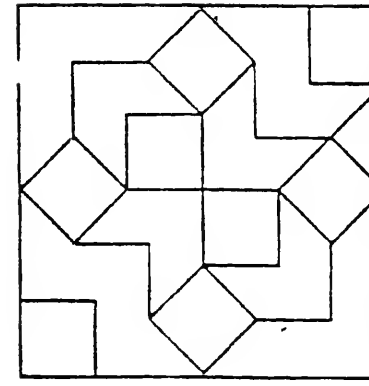


design 2 – black and white



design 3 – colored



design 4 – black and white

APPENDIX B

Questionnaires of Study #3

- Pre and Post Session Depression Questionnaire
- Individual Session Questionnaire
- Post Sessions Questionnaire
- Primary Nurse Evaluations
- Experimenter Evaluation Sheet

Block Designs

PRE AND POST SESSION EMOTIONAL QUESTIONNAIRE

Please evaluate the following statements. How true are they for you right now in your life? Rate them on the provided scale by circling the number that best expresses your feelings. Numbers closer to **1** indicate that the statement is **less** true, numbers closer to **5** indicate that the statement is **more** true.

1. I am basically satisfied with my life.

1 2 3 4 5

not at all true very true

2. I have dropped many of my activities and interests.

1 2 3 4 5

not at all true very true

3. I feel that my life is empty.

1 2 3 4 5

not at all true very true

4. I often get bored.

1 2 3 4 5

not at all true very true

5. I am in good spirits most of the time.

1 2 3 4 5

not at all true very true

6. I am afraid that something bad is going to happen to me.

1 2 3 4 5

not at all true very true

7. I feel happy most of the time.

1 2 3 4 5

not at all true very true

8. I often feel helpless.

1 2 3 4 5

not at all true very true

9. I prefer to stay at home, rather than going out and doing new things.

1 2 3 4 5

not at all true very true

10. I feel I have more problems with memory than most.

1 2 3 4 5

not at all true very true

11. I think it is wonderful to be alive now.

1 2 3 4 5

not at all true very true

12. I feel pretty worthless the way I am now.

1 2 3 4 5

not at all true very true

13. I feel full of energy.

1 2 3 4 5

not at all true very true

14. I feel that my situation is hopeless.

1 2 3 4 5

not at all true very true

15. I think that most people are better off than I am.

1 2 3 4 5

not at all true very true

INDIVIDUAL SESSION QUESTIONNAIRE:

Please take a few minutes to answer the following questions, evaluating your session: The questions are followed by a scale numbered from one to five. Circle the number which most closely matches your opinion.

1. **How interesting did you find the activity?**

1	2	3	4	5
not at all				very

2. **How challenging did you find the activity?**

1	2	3	4	5
not at all				very

3. **How stressful did you find the activity?**

1	2	3	4	5
not at all				very

4. **How would you evaluate your feelings towards the activity?**

1	2	3	4	5
very negative				very positive

5. **How successful do you feel you were in completing the activity?**

1	2	3	4	5
not at all				very

6. **Compared to the last time you did the activity, how much do you feel you improved?**

1	2	3	4	5
got worse		not at all		got a lot better

POST SESSIONS QUESTIONNAIRE

Rate the degree to which each of these factors influenced your performance

		Negatively	slightly	**Neutral**	slightly	**Positively**
1.	interest of the task	1	2	3	4	5
2.	enjoyment of the task	1	2	3	4	5
3.	the experimenter	1	2	3	4	5
4.	the amount of practice	1	2	3	4	5
5.	your ability level	1	2	3	4	5
6.	the fact that you were timed	1	2	3	4	5

Evaluate the truths of the following statements:

1. **I put effort into the task because it interested me.**

1 2 3 4 5 6 7
not at all true very true

2. I put effort into the task because I wanted to improve past performance.

1 2 3 4 5 6 7
not at all true very true

3. I put effort into the task only to complete the experimental requirements.

1 2 3 4 5 6 7
not at all true very true

4. **Success in my performance was due to my natural ability.**

1 2 3 4 5 6 7
not at all true very true

5. Success in my performance was due to practice.

1 2 3 4 5 6 7
not at all true very true

6. **The experimenter positively affected my performance.**

1 2 3 4 5 6 7
not at all true very true

7. The experimenter negatively affected my performance.

1 2 3 4 5 6 7
not at all true very true

8. How helpful did you find your interactions with the experimenter?

1 2 3 4 5 6 7
not at all very

9. How unhelpful did you find your interactions with the experimenter?

1 2 3 4 5 6 7
not at all very

PRIMARY NURSE EVALUATIONS:

As part of the research I am currently conducting, I am interested in any physiological changes you have observed in the following resident. Please complete the questionnaire when you have time. Thank you. If you have any questions, please ask me (Susan Bobb) or you may also contact Heather Loveless or Mark Jaeckle with any concerns.

Resident's Name_____

Please circle the appropriate response:

1. **Have you noticed any changes in the resident's appetite? Please circle: Yes No Not Sure**

   If yes, how much?

1	2	3	4	5
decreased a lot	decreased slightly	stayed same	increased slightly	increased a lot

   Comments:_____

2. **Have you noticed any changes in the resident's sleeping habits? Yes No Not Sure**

   If yes, what kind?

1	2	3	4	5
sleeps a lot less	sleeps slightly less	sleeps the same amount	sleeps slightly more	sleeps a lot more

   Comments:_____

3. **Have you noticed any changes in the resident's attitude towards you/others? Yes No Not Sure**

   If yes, what kind of attitude have you observed?

1	2	3	4	5
very negative attitude		neutral/uninterested		very positive attitude

   Comments:_____

4. **Have you noticed any change in the resident's general level of activity? Yes No Not Sure**

   If so, how much?

1	2	3	4	5
decreased a lot	decreased slightly	stayed same	increased slightly	increased a lot

   Comments:_____

6. **Have you noticed any other changes in the resident's demeanor, daily life, etc.? Yes No Not Sure**

   If yes, please explain:

EXPERIMENTER EVALUATION SHEET

Practice: **Date:**
Observed Difficulties:

Session 1: **Date:**

DESIGN 1		**DESIGN 2**	
Speed:		**Speed:**	
Accuracy:	**mismatched color:**	**Accuracy:**	**mismatched color:**
	mismatched shape:		**mismatched shape:**
	missing blocks:		**mismatched blocks:**

Observed Difficulties:

Session 2: **Date:**

DESIGN 3		**DESIGN 4**	
Speed:		**Speed:**	
Accuracy:	**mismatched color:**	**Accuracy:**	**mismatched color:**
	mismatched shape:		**mismatched shape:**
	missing blocks:		**mismatched blocks:**

Observed Difficulties:

Session 3: **Date:**

DESIGN 1		**DESIGN 2**	
Speed:		**Speed:**	
Accuracy:	**mismatched color:**	**Accuracy:**	**mismatched color:**
	mismatched shape:		**mismatched shape:**
	missing blocks:		**mismatched blocks:**

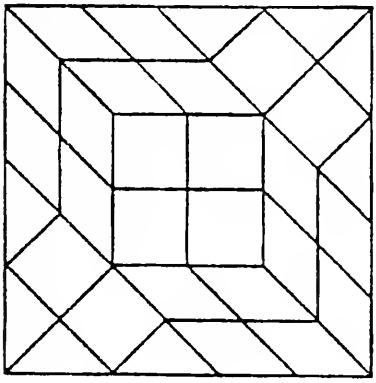
Observed Difficulties:

Session 4: **Date:**

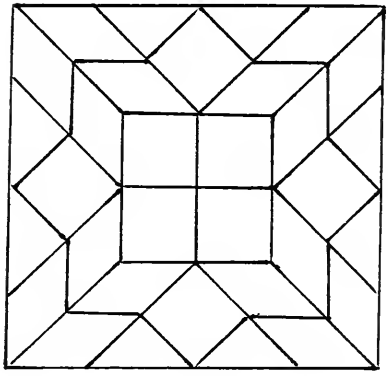
DESIGN 3		**DESIGN 4**	
Speed:		**Speed:**	
Accuracy:	**mismatched color:**	**Accuracy:**	**mismatched color:**
	mismatched shape:		**mismatched shape:**
	missing blocks:		**mismatched blocks:**

Observed Difficulties:

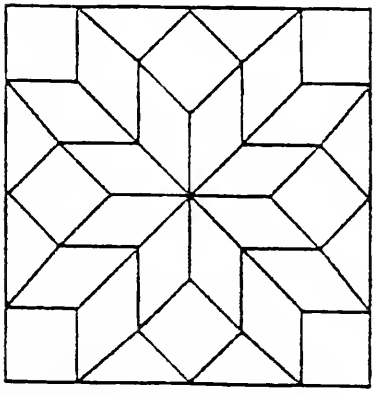
BLOCK DESIGNS: Winter and Spring



Practice Design



Design A



Design B

APPENDIX C

Questionnaires of Study #4

Pre and Post Session Depression Questionnaire

Individual Session Questionnaire

Post Sessions Questionnaire

Primary Nurse Evaluations

Experimenter Evaluation Sheet

PRE AND POST SESSION DEPRESSION QUESTIONNAIRE

Please evaluate the following statements. How true are they for you right now in your life? Rate them on the provided scale by circling the number that best expresses your feelings. Numbers closer to 1 indicate that you disagree more with the statement, numbers closer to 5 indicate that you agree more with the statement

1. I am basically satisfied with my life.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

2. I have dropped many of my activities and interests

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

3. I feel that my life is empty.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

4. I often get bored.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

5. I am in good spirits most of the time.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

6. I am afraid that something bad is going to happen to me

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

7. I feel happy most of the time.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

8. I often feel helpless.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

9. I prefer to stay at home, rather than going out and doing new things.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

10. I feel I have more problems with memory than most.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

11. I think it is wonderful to be alive now.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

12. I feel pretty worthless the way I am now.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

13. I feel full of energy.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

14. I feel that my situation is hopeless.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

15. I think that most people are better off than I am.

1	2	3	4	5
strongly disagree	mostly disagree	equally disagree/agree	mostly agree	strongly agree

INDIVIDUAL SESSION QUESTIONNAIRE:

Please take a few minutes to answer the following questions, evaluating your session: The questions are followed by a scale numbered from one to five. Circle the number which most closely matches your opinion.

1. **How interesting did you find the activity?**

1	2	3	4	5	not sure
not at all	barely	a little	somewhat	very	

2. **How challenging did you find the activity?**

1	2	3	4	5	not sure
not at all	barely	a little	somewhat	very	

3. **How stressful did you find the activity?**

1	2	3	4	5	not sure
not at all	barely	a little	somewhat	very	

4. **How would you evaluate your feelings towards the activity?**

1	2	3	4	5	not sure
very negative	barely negative	neutral	somewhat positive	very positive	

5. **How successful do you feel you were in completing the activity?**

1	2	3	4	5	not sure
not at all	barely	a little	somewhat	very	

6. **Compared to the last time you did the activity, how much do you feel you improved?**

1	2	3	4	5	not sure
not at all	barely	a little	somewhat	very	

POST SESSION QUESTIONNAIRE

Evaluate the following statements by circling the appropriate response:

1. **How much I enjoyed the activity influenced how well I did…**

1	2	3	4	5	
not at all	very little	a little	somewhat	a lot	not sure

2. **The student working with me influenced how well I did…**

1	2	3	4	5	
not at all	very little	a little	somewhat	a lot	not sure

3. **The fact that I was timed influenced how well I did…**

1	2	3	4	5	
not at all	very little	a little	somewhat	a lot	not sure

4. **The activity interested me…**

1	2	3	4	5	
not at all	very little	a little	somewhat	a lot	not sure

5. **I wanted to improve my performance…**

1	2	3	4	5	
not at all	very little	a little	somewhat	very much	not sure

6. **I wanted to help the student with her research…**

1	2	3	4	5	
not at all	very little	a little	somewhat	very much	not sure

7. **The reason I did well on the puzzle was because of the student working with me…**

1	2	3	4	5
not at all true	hardly true	a little true	somewhat true	very true

8. **The reason I did well on the puzzle was because I did it several times…**

1	2	3	4	5
not at all true	hardly true	a little true	somewhat true	very true

9. **The reason I did well on the puzzle was because of my natural ability…**

1	2	3	4	5
not at all true	hardly true	a little true	somewhat true	very true

10. **The student working with me had a positive effect on me.**

1	2	3	4	5
not at all true	hardly true	a little true	somewhat true	very true

11. **The student working with me had a negative effect on me.**

1	2	3	4	5
not at all true	hardly true	a little true	somewhat true	very true

12. **Did you find** the student working with you **helpful?**

1	2	3	4	5
never	hardly	sometimes	usually	always

13. **Did you find** the student working with you **unhelpful?**

1	2	3	4	5
never	hardly	sometimes	usually	always

PRIMARY NURSE EVALUATIONS:

As part of the research I am currently conducting, I am interested in any physiological changes you have observed in the following resident, specifically *changes which you have noticed over the past two weeks.* Please complete the questionnaire when you have time. Thank you. If you have any questions, please ask me (Susan Bobb) or call me at 381-7486.

Resident's Name_____

Please circle the appropriate response:

1. Have you noticed any changes in the resident's appetite? Please circle: Yes No Not Sure

If yes, how much?

1	2	3	4	5
decreased a lot	decreased slightly	stayed same	increased slightly	increased a lot

Comments:_____

3. Have you noticed any changes in the resident's sleeping habits? Yes No Not Sure

If yes, what kind?

1	2	3	4	5
sleeps a lot less	sleeps slightly less	sleeps the same amount	sleeps slightly more	sleeps a lot more

Comments:_____

4. Have you noticed any changes in the resident's attitude towards you/others? Yes No Not Sure

If yes, what kind of attitude have you observed?

1	2	3	4	5
very negative attitude		neutral/uninterested		very positive attitude

Comments:_____

5. Have you noticed any change in the resident's general level of activity? Yes No Not Sure

If so, how much?

1	2	3	4	5
decreased a lot	decreased slightly	stayed same	increased slightly	increased a lot

Comments:_____

6. Have you noticed any other changes in the resident's demeanor, daily life, etc.? Yes No Not Sure

If yes, please explain:

EXPERIMENTER EVALUATION SHEET

Practice: **Date:**
Observed Difficulties:

Session 1: **Date:** **DESIGN I**

Speed:

Accuracy: **mismatched color:**
mismatched shape:
double layering:
missing blocks:

Observed Difficulties:

Session 2: **Date:** **DESIGN 2**

Speed:

Accuracy: **mismatched color:**
mismatched shape:
double layering:
missing blocks:

Observed Difficulties:

Session 3: **Date:** **DESIGN 1**

Speed:

Accuracy: **mismatched color:**
mismatched shape:
double layering:
missing blocks:

Observed Difficulties:

APPENDIX D

PARTICIPANT PROFILES: Winter

Participant A3: stroke on right side, somewhat flat affect, but very willing to participate, strong faith in God, which was often expressed. Her faith seems to give her a positive outlook on her situation and life; this may have affected her responses on the depression questionnaire. Early 70s. Had little to no problems with building blocks.

Participant A1: blind in left eye. Favored left hand because the right one was slightly impaired. Some color confusion, some difficulty manipulating blocks (fine motor movement). Several times would double layer the blocks (problems with depth perception?). Very positive attitude. Hardly any family left. An ex-son in law visits regularly and brings her little 6 year old great-granddaughter to visit. Strong religious background. 91 years old. She is very close to her roommate who is also a participant. They seem to mutually encourage each other…could account for a higher than average adjustment on the depression scale.

Participant A5: younger woman (40s?) with Multiple Sclerosis. Suffers from shakes, which made accurate block laying difficult. Some color mismatching (red-green, blue-purple). Extremely upbeat and positive. Is the encouraging force for the rest of the residents in the facility. Has many friends who come visit her. This might limit how much of a difference interacting over the blocks could effect in her (ceiling effect).

Participant B7: lost her son three days before testing started. Early 80s. No family left, so she is very lonely. Easily started crying. Due to death of her son, I could not give her the depression scale (she started breaking down when I asked the first few questions). Very responsive to the building blocks, always willing to participate. Sweet disposition. Her right hand was unusable. Some color confusion. Hard of hearing. Poor eye sight. Although her physical disabilities made her a challenge to work with, her emotional hardships also make her an ideal candidate for possibly indicating an improvement before/after the block-laying.

Participant A4: stroke on left side. Seemingly some bi-lateral neglect. Poor eye sight. Physical handicaps may make block laying a challenge. Very strong faith, which she credits in getting her through her troubles. Very willing to participate. Double-layered blocks on the designs (depth perception?) Seemed

rather moody at times; depressed, although questionnaire does not seem to indicate this. Lack of zest for life.

PARTICIPANT PROFILES: Spring

Participant 1E: Elderly lady, probably in her late 70s, originally from Germany. Her German background gives us an easy opening for connecting and interacting: she loves it when I talk German with her, or bring in photos of my home and friends in Austria and Germany. Enjoys the distraction of the puzzles, likes to chat. Mobile, a bit slow to move and has difficulty getting up and down. She has also fallen before, which affects her mood; this could skew questionnaire results. Has hip problems and is often in pain. She has fair finger dexterity and fair eyesight, and although she can mobilize blocks well, she cannot write. She likes to talk about her children, grandchildren, and great-grandchildren.

Participant 2E: Lady 100 years old; spent most of her adult life living on Sweet Briar Campus because her husband was a security officer for the college. Enjoys reminiscing about Sweet Briar and people she still knows there, which gives us an opening for conversations since I currently attend Sweet Briar. Very mobile, a bit of lordosis. Blind in right eye (had cornea transplants). Visual impairment may affect ability to complete puzzles, but does not seem to be much of a problem. Very hard of hearing, which made conversation difficult at times, and could possibly affect the depth of our connection. Left-handed. Can still write to some extent. Has children, grandchildren and great-grandchildren which she also enjoys talking about. Goes walking every morning around the grounds of the retirement center (~1 mile).

Participant 1L: 93 year old man. Can read pretty well, can still sign his name. Fairly mobile; uses a railing in order to walk down hallways. Seems eager to help in research. Has a lot of local family who visits him fairly regularly. No apparent problems with block laying, although the fact that the shade of blue on the blocks is slightly different from the shade of blue on the design card confused him.

Participant 2L: Man in mid 70s. Suspect some dementia as he repeats stories frequently during visits which have seemingly no connection to what is going on. Takes a little more time on puzzles than participant 1L who is also his roommate. Poor eyesight: can no longer sign his own name and seems to have difficulty reading. Sometimes has problems manipulating blocks or figuring out the direction a block should be placed. Hardly any problems with mobility.

Winter Study Impressions and Concluding Observations:

This research attempt probably failed to produce usable quantitative data (although I will still be doing statistical evaluation on the data I collected, to look for trends). However, as a pilot study, the research was invaluable, helping to refine the methodology of the current study in practical terms. The practical limitations of working with a geriatric population became obvious. While the research was expected to be time consuming, the actual time commitment was greatly underestimated. Right now I'm not even sure that my approach to testing my hypothesis is even feasible, especially when working with an impaired geriatric population because of their difficulty in filling out evaluations. But it is precisely their handicaps which make them a better population for research. I'm trying to figure out this bit of a catch-22.

On a personal side note, I loved getting to know the five ladies in my research, as well as the coordinator of activities with whom I worked. I was impressed how these elderly ladies, despite their handicaps, continued to have a positive outlook on life. It also struck me how often they pointed to their personal faith in God as their reason for living and hanging on.

It was easy developing relationships with each of them, especially by just spending time with them, talking, filing a water bottle here, getting a drink of water for another participant there, running errands for them, painting nails etc. I also helped out with regular activities scheduled by the nursing home (the plastic bowling was my favorite).

While this experience may have only helped my research minutely, the appreciation the participants expressed made the whole project worthwhile. I did so little for them, yet they told me repeatedly how much my coming meant to them. I think they were also gratified to be of help to my project, to be able to do something else for somebody.

Spring Study Impressions and Concluding Observations

The methodology ran much smoother for this study than for the winter study. Reworded questionnaires seemed to be easier for the participants to understand. The two assistants did not notice any confusion or frustration in participants while administering the depression and post-session evaluations. As a whole, once the actual testing began, it seemed most of the methodological glitches of the winter study had been ironed out.

One of the only true frustrations I experienced is that the two participants in the Physical Interaction group seemed to become attached to me despite my efforts to remain distant. One of the gentlemen expressed that I reminded him of his stepdaughter, and would at the end of sessions help me clean up the blocks in order to be of service to me. The other gentleman often asked me about how school was going and expressed genuine interest in me as a person (as opposed to me as the researcher).

I often wished during this time that I could have focused my time entirely on research instead of having to balance an active academic life as well. I regret not having been able to test more participants, or to test participants over a longer period of time. I believe that one factor of confounding in the data may be that sessions are not carried out over a long enough period of time in order to register any significant changes in the depression questionnaires.

The four participants in the study were some of the highest functioning residents, and most active residents at the senior center. I was impressed with how all four residents took an active interest in the other residents and expressed appreciation for the senior center. I also noticed that similar to the winter study, three of the participants often credited their faith in God as the motivating force throughout their lives.

As in the winter study, I immensely enjoyed my interactions with participants, especially because I shared much in common with the two ladies in the Emotional Interaction group. One of the ladies had lived a long time at Sweet Briar, and the other lady immigrated from Germany, where I was born and grew up. Our connection became so close that I have continued to visit the two ladies on a weekly basis, and will continue to do so until graduation.

APPENDIX E

ANOVA table sets:

Table E1 – ANOVA for Depression Questionnaire: Spring

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
Group	1	7.008	7.008	3.036	.2236		
Subject(Group)	2	4.617	2.308				
Tests	1	.008	.008	.003	.9615	.9615	.9615
Tests * Group	1	5.208	5.208	1.855	.3064	.3064	.3064
Tests * Subject(Group)	2	5.617	2.808				
Questions	14	36.550	2.611	2.386	.0243	.2142	.0243
Questions * Group	14	25.617	1.830	1.672	.1199	.3003	.1199
Questions * Subject(Group)	28	30.633	1.094				
Tests * Questions	14	16.117	1.151	1.126	.3798	.4071	.3914
Tests * Questions * Group	14	13.917	.994	.972	.5034	.4447	.4959
Tests * Questions * Subject...	28	28.633	1.023				

Dependent: SCORES

Table of Epsilon Factors for df Adjustment
Dependent: SCORES

	G-G Epsilon	H-F Epsilon
Tests	1.000	2.000
Questions	.133	2.942
Tests * Questions	.112	.719

NOTE: Probabilities are not corrected for values of epsilon greater than 1.

Means Table
Effect: Questions
Dependent: SCORES

	Count	Mean	Std. Dev.	Std. Error
Q 1	8	1.750	.463	.164
Q 2	8	3.500	.926	.327
Q 3	8	1.875	.641	.227
Q 4	8	2.250	1.165	.412
Q 5	8	1.750	1.035	.366
Q 6	8	1.625	.518	.183
Q 7	8	2.250	1.282	.453
Q 8	8	2.250	.886	.313
Q 9	8	2.375	1.408	.498
Q 10	8	2.375	1.506	.532
Q 11	8	2.250	1.165	.412
Q 12	8	3.000	1.690	.598
Q 13	8	3.250	1.488	.526
Q 14	8	1.750	.707	.250
Q 15	8	1.875	1.356	.479

Table E2 – ANOVA for Depression Questionnaire: Entire Spring Data Treated as Emotional Group

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
Subject	3	11.625	3.875				
Tests	1	.008	.008	.002	.9647	.9647	.9647
Tests * Subject	3	10.825	3.608				
Questions	14	36.550	2.611	1.949	.0481	.2060	.0481
Questions * Subject	42	56.250	1.339				
Tests * Questions	14	16.117	1.151	1.136	.3572	.3838	.3619
Tests * Questions * Sub...	42	42.550	1.013				

Dependent: SCORES

Table of Epsilon Factors for df Adjustment
Dependent: SCORES

	G-G Epsilon	H-F Epsilon
Tests	1.000	1.000
Questions	.180	1.222
Tests * Questions	.171	.889

NOTE: Probabilities are not corrected for values of epsilon greater than 1.

Means Table
Effect: Questions
Dependent: SCORES

	Count	Mean	Std. Dev.	Std. Error
Q 1	8	1.750	.463	.164
Q 2	8	3.500	.926	.327
Q 3	8	1.875	.641	.227
Q 4	8	2.250	1.165	.412
Q 5	8	1.750	1.035	.366
Q 6	8	1.625	.518	.183
Q 7	8	2.250	1.282	.453
Q 8	8	2.250	.886	.313
Q 9	8	2.375	1.408	.498
Q 10	8	2.375	1.506	.532
Q 11	8	2.250	1.165	.412
Q 12	8	3.000	1.690	.598
Q 13	8	3.250	1.488	.526
Q 14	8	1.750	.707	.250
Q 15	8	1.875	1.356	.479

Table E3 – ANOVA for Depression Questionnaire: Entire Spring and Winter Data Treated as Emotional Group

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
Subject	7	50.862	7.266				
Tests	1	.338	.338	.142	.7179	.7179	.7179
Tests * Subject	7	16.696	2.385				
Questions	14	40.808	2.915	2.335	.0079	.0737	.0118
Questions * Subject	98	122.325	1.248				
Tests * Questions	14	7.475	.534	.616	.8463	.6613	.8114
Tests * Questions * Subject	98	84.992	.867				

Dependent: SCORES

Table of Epsilon Factors for df Adjustment
Dependent: SCORES

	G-G Epsilon	H-F Epsilon
Tests	1.000	1.000
Questions	.309	.873
Tests * Questions	.298	.793

Means Table
Effect: Questions
Dependent: SCORES

	Count	Mean	Std. Dev.	Std. Error
Q 1	16	1.625	.500	.125
Q 2	16	2.812	1.276	.319
Q 3	16	1.500	.632	.158
Q 4	16	1.812	1.047	.262
Q 5	16	1.562	.814	.203
Q 6	16	1.375	.500	.125
Q 7	16	1.625	1.088	.272
Q 8	16	2.125	1.147	.287
Q 9	16	2.562	1.459	.365
Q 10	16	2.188	1.515	.379
Q 11	16	1.688	1.014	.254
Q 12	16	2.062	1.526	.382
Q 13	16	2.438	1.413	.353
Q 14	16	1.625	.885	.221
Q 15	16	1.812	1.223	.306

Table E4 – ANOVA for Individual Session Evaluations: Interest

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
group	1	2.083	2.083	.510	.5492		
Subject(Group)	2	8.167	4.083				
Sessions	2	1.500	.750	9.000	.0331	.0955	.0331
Sessions * group	2	.167	.083	1.000	.4444	.4226	.4444
Sessions * Subj...	4	.333	.083				

Dependent: Interest

Table of Epsilon Factors for df Adjustment
Dependent: Interest

	G-G Epsilon	H-F Epsilon
Sessions	.500	1.000

Table E5 – ANOVA for Individual Session Evaluations: Interest as a 1-Way ANOVA

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
Subject	3	10.250	3.417				
Sessions	2	1.500	.750	9.000	.0156	.0577	.0577
Sessions * Su...	6	.500	.083				

Dependent: Interest

Table of Epsilon Factors for df Adjustment
Dependent: Interest

	G-G Epsilon	H-F Epsilon
Sessions	.500	.500

Table E6 – ANOVA for Individual Session Evaluations: Interest for Winter and Spring Data

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
Subject	7	11.833	1.690				
Sessions	2	2.083	1.042	3.723	.0505	.0689	.0561
Sessions * Su...	14	3.917	.280				

Dependent: Interest

Table of Epsilon Factors for df Adjustment
Dependent: Interest

	G-G Epsilon	H-F Epsilon
Sessions	.754	.916

Table E7 – ANOVA for Individual Session Evaluations: Perceived Stress

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
group	1	5.333	5.333	16.000	.0572		
Subject(Group)	2	.667	.333				
Sessions	2	1.167	.583	.538	.6208	.5394	.6208
Sessions * group	2	1.167	.583	.538	.6208	.5394	.6208
Sessions * Subj...	4	4.333	1.083				

Dependent: Stress

Table of Epsilon Factors for df Adjustment
Dependent: Stress

	G-G Epsilon	H-F Epsilon
Sessions	.500	1.000

NOTE: Probabilities are not corrected for values of epsilon greater than 1.

Table E8 – ANOVA for Block Assembly Speed: Spring Data

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
Group	1	14450.000	14450.000	1.364	.3633		
Subject(Group)	2	21194.000	10597.000				
design 1	1	7688.000	7688.000	33.138	.0289	.0289	.0289
design 1 * Group	1	800.000	800.000	3.448	.2044	.2044	.2044
design 1 * Subje...	2	464.000	232.000				

Dependent: Speed

Table of Epsilon Factors for df Adjustment
Dependent: Speed

	G-G Epsilon	H-F Epsilon
design 1	1.000	2.000

NOTE: Probabilities are not corrected for values of epsilon greater than 1.

Table E9 – ANOVA for Block Assembly Speed: Spring and Winter Data

Type III Sums of Squares

Source	df	Sum of Squares	Mean Square	F-Value	P-Value	G-G	H-F
Subject	7	282311.000	40330.143				
design 1	1	11449.000	11449.000	6.449	.0387	.0387	.0387
design 1 * Sub...	7	12427.000	1775.286				

Dependent: Speed

Table of Epsilon Factors for df Adjustment
Dependent: Speed

	G-G Epsilon	H-F Epsilon
design 1	1.000	1.000